## REMARKS

Claims 1-25 are pending. Claims 1, 11 and 21 have been amended.

### Claim Rejections – 35 U.S.C. §112

The Examiner asserted that claims 1-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The Examiner noted that the rejection would be withdrawn upon modification of the claim language so that the claims reflect the specification. As discussed with the Examiner in an Interview on May 4, 2004, claims 1, 11 and 21 have been revised to clarify language relating to the "first" and "second" rectangles. In particular, "color buffer resolutions larger than could be otherwise accommodated by image limits are handled" has been amended to associate with the second rectangle rather than first rectangle. Applicant respectfully request that the rejection be withdrawn.

### Claim Rejections – 35 U.S.C. §103

The Examiner asserted that claims 1, 2, 4, 6-8, 10-12, 14, 16-18, 20-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (U.S. Patent 6,144,387) in view of Smith et al. (U.S. Patent 6,424,345 B1).

Applicant respectfully disagrees with the Examiner's assertions. In particular, claims 1-25 fail to teach or suggest "such that color buffer resolutions larger than could be otherwise accommodated by image limits are handled, wherein the first and second rectangles define a two dimensional array of zones with associated bin numbers; in response to the second rectangle being smaller than the first rectangle, the zones along the edges of the second rectangle are extended out to first rectangle boundaries to define zones larger than the optimal zone size."

The present invention provides on page 12, first and second full paragraphs:

> "Graphics-binning engine 126 (FIG. 2) uses two rectangles in the process of determining primitive-zone intersections: bin array rectangle 184 and binner clipping rectangle 186. Both of these rectangles 184, 186 are defined by graphics device state variables containing the screen-space location of the rectangle corners. Binner clipping rectangle 186 is used to define the visible region in screen coordinates. In most cases, the binner clipping rectangle 186 will coincide with the extent of color buffer 178 (FIG. 4), though one skilled in the art will recognize that this is not a requirement. Objects completely outside binner clipping rectangle 186 in one or more directions will be discarded. Objects that cannot be discarded will be subject to bin determination.

> Bin array rectangle 184 is supported to handle color buffer resolutions larger than could otherwise be accommodated by the optimally-renderer image limits. If this threshold is exceeded, some portions of the scene will be rendering non-optimally. The non-optimal rendering is caused by rendering zones 182 larger than the optimal (cache-sized) zone size, where additional color/Z bandwidth may be required as the render cache 110 cannot contain the color and depth values for the enlarged zones.

> Moreover, as noted in the specification on page 13, first full paragraph and shown in FIG. 2:

> In those cases where the (optimal_zone_size * max_bins) threshold pixel area is exceeded, bin array rectangle 184 is programmed using the following additional rules:
>
> - The corners are zone-aligned in X and Y, but need not coincide with the binner clipping rectangle 186 corners (e.g., the bin array rectangle 184 can be centered within the binner clipping rectangle 186, or justified to a certain edge of the binner clipping rectangle 186, etc).
> - The total area of the bin array rectangle 184 is equal (or less than) the (optimal_chunk_size*max_bins) threshold.
>
> Together, bin array rectangle 184 and binner clipping rectangle 186 define a 2D array of zones with associated bin numbers."

For the case where the first and second rectangles coincide, all zones are the same (optimal zone) dimension. For the case where the second rectangle is smaller than the first rectangle, the interior zones have optimal zone dimensions, though the zones along the edges of the second rectangle are extended out to the first rectangle boundaries to define zones larger than the optimal zone size. The rendering of the enlarged zones may be less efficient due to a possibly greater memory bandwidth demand for colors and/or depth accesses to the respective memory-resident buffers.

Neither Liu or Smith, alone or in combination, teaches or suggests in response to the second rectangle being smaller than the first rectangle, the zones along the edges of the second rectangle are extended out to first rectangle boundaries to define zones larger than the optimal zone size." Liu, in fact, disregards these zones altogether by clipping them. In particular, as noted in column 3, lines 19-24 of Liu: "Any projections which are partially outside of the guard memory region are ignored, unless they also overlap with the display image area of the image plane. Only the projections which overlap the display image area of the image plane and also extend beyond the guard memory region are clipped." Moreover, none of the zones are extended to define zones larger than the optimal zone size.

Moreover, the cited references fail to teach or suggest a second rectangle for handling buffer resolutions. Applicant respectfully disagrees with the Examiner's assertion that the "second rectangle" is similar to the guard memory boundaries that store pixel color data. The cited references fail to disclose bin array and bin clipping rectangles that operate in conjunction to determine primitive-chunk intersections as claimed.

## CONCLUSION

In view of the foregoing, it is respectfully asserted that all of the claims pending in this patent application are in condition for allowance.

The required fee for a two-month extension of time is enclosed. Should it be determined that an additional fee is due under 37 CFR §§1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account #02-2666.

If the Examiner has any questions, he is invited to contact the undersigned at (323) 654-8218. Reconsideration of this patent application and early allowance of all the claims is respectfully requested.

Respectfully submitted,

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Dated: September 16, 2004

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**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, Post Office Box 1450, Alexandria, Virginia 22313-1450 on September 16, 2004.

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*Margaux Rodriguez* *September 16, 2004*